IN THE CLAIMS:

1 (currently amended). A process for the saturation of acetylenes contained in a butadiene rich stream comprising the steps of:

(a) feeding hydrogen and a stream containing butadienes and acetylenes to a distillation column reactor containing a first hydrogenation catalyst; and

(b) concurrently in the distillation column reactor;

(i) reacting a portion of the acetylenes contained within the effluent with hydrogen without substantial hydrogenation of the butadienes, ~~and~~

(ii) distilling the effluent to remove an overhead and bottoms; and

(iii) recovering butadienes and unreacted acetylenes in the overhead;

(c) feeding hydrogen and the overheads from the distillation column reactor to a single pass down flow reactor containing a second hydrogenation catalyst wherein less than all of the acetylenes are reacted with hydrogen without substantial hydrogenation of the butadienes; and

(d) recovering an effluent containing said butadienes and having reduced acetylene content.

2 (original). The process according to claim 1 wherein said acetylenes comprise vinyl acetylene, ethyl acetylene and methyl acetylene.

3 (currently amended). The process according to claim 2 wherein the ratio of vinyl acetylene to ethyl acetylene in said stream is in the range of ~~0.0~~ 0 to 1.0:1.

4 (original). The process according to claim 2 wherein the ratio of vinyl acetylene

to ethyl acetylene in said stream is in the range of 0.01 to 0.6:1.

5 (original). The process according to claim 1 wherein a solvent is fed to the distillation column reactor along with the hydrogen and butadiene stream.

6 (original). The process according to claim 5 wherein the solvent is separated from said bottoms and recycled to the single pass down flow reactor.

7 (original). The process according to claim 6 wherein the solvent is selected from the group consisting of C_4 to C_{10} paraffinic hydrocarbons, benzene, toluene and ethers.

8 (original). The process according to claim 1 wherein the first and second hydrogenation catalyst comprises an alumina supported palladium promoted copper catalyst.

9 (original). The process according to claim 1 wherein the first and second hydrogenation catalysts are independently a copper catalyst promoted with palladium, an improved palladium catalyst or combinations thereof.

10 (original). The according to claim 1 comprising:

(e) feeding hydrogen and a portion of the effluent from (d) to a distillation column reactor containing a first hydrogenation catalyst; and

(f) concurrently in the distillation column reactor;

(i) reacting a portion of the acetylenes contained within the effluent with hydrogen, and

(ii) distilling the effluent to remove an overhead and bottoms.